REMARKS

The claims have been amended to better conform with U.S. practice, such as removing multiple dependencies. Applicants respectfully request substantive examination on the merits.

Respectfully submitted,

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Susan E. Freedman
Date of Signature: December 21, 2001

VERSION WITH MARKINGS TO SHOW CHANGES MADE

The following is an addendum to the concurrently filed Preliminary Amendment in the above-referenced application. This addendum includes a marked-up version of the changes made to the claims by the present Preliminary Amendment.

In the Claims:

1. (Amended) [Compound] A compound of the general formula (I)

$$X(B)_m \qquad (I)$$

wherein

X is an m-valent unit and

B are identical or different and denote K-R,

wherein

K is a bond or is A^1-(A^2-A^3)$_k$-sp, wherein

A^1 is $(CH_2)_tY(CH_2)_u$, wherein

Y is >C=O, >NH, -O-, -S- or a bond,

t is an integer from 0 to 6 and

u is an integer from 0 to 6,

A^2 is -NHCO-, -CONH-, -OCONH- or SCONH-, or is –CO-,

A^3 is $(CH_2)_r$, $O(CH_2)_r$, $NH(CH_2)_r$, $S(CH_2)_r$ or -(CHQ)-, wherein

r is an integer from 1 to 6 and

Q is a substituted or unsubstituted alkyl or aryl group,

sp is a divalent spacer or a bond, and

k is an integer from 5 to 100, and

R is hydrogen; a ligand suitable for specific bonding to a receptor; a marker molecule; or a catalytically active group; and

m is at least 2,

with the proviso that

(1) in the compound at least one R is not hydrogen,

(2) there are at least two K that are not a bond, and

(3) X, B and m are so selected that an intermolecular association of the K in liquid phase by the formation of hydrogen bonds is possible, with formation of aggregates that present on the surface a plurality of R that are not hydrogen, and

(4) the molar mass of the fragment $X(K)_m$ is less than 20,000.

2. (Amended) [Compound] A compound according to claim 1, wherein the molar mass of the fragment $X(K)_m$ is less than 4,000.

3. (Amended) [Compound] A compound according to [either] claim 1 [or claim 2], wherein

m is an integer from 2 to 4, and

X is CH_{4-m}, NH_{3-m}, N^+H_{4-m}, >P- (when m = 3), $>P^+<$ (when m = 4), >B- (when m = 3), a linear atom group C_2H_{6-m}, $>CH(CH_2)_zCH<$, >C=C<, >N-N<, $>N(CH_2)_zN<$ wherein z = 2 - 6, when m = 4), a carbocyclic atom group C_6H_{6-m}, C_6H_{12-m}, or a heterocyclic atom group C_3N_3 (when m = 3), C_4N_2 (when m = 4).

4. (Amended) [Compound] A compound according to [any one of claims 1 to 3] claim 1, wherein there are at least 3 K.

5. (Amended) [Compound] A compound according to [any one of claims 1 to 4] claim 1, wherein at least two R are not hydrogen.

6. (Amended) [Compound] A compound according to [any one of claims 1 to 4] claim 1, wherein at least three R are not hydrogen.

7. (Amended) [Compound] A compound according to [any one of claims 1 to 6] claim 1, wherein the ligand R is a mono- or oligo-saccharide, a peptide, a mono- or oligo-nucleotide or a nucleic base and their derivatives and mimetics.

8. (Amended) [Compound] A compound according to claim 7, wherein the saccharide R is sialic acid, sialyl lactose, sialyl lactosamine, lactose, mannose, Galα1-3Gal,

Galα1-3(Fucα1-2)Gal, GalNAcα1-3(Fucα1-2)Gal, Neu5Acα2-6GalNAc, $SiaLe^A$, $SiaLe^X$, HSO_3Le^A, HSO_3Le^X, Galα1-3Galβ1-4GlcNAc, Galα1-3Galβ1-4Glc, $HSO_3GlcA\beta1$-3Galβ1-4GlcNAc, N-acetyl-lactosamine or polylactosamine, or wherein the saccharide is sialic acid benzyl glycoside, $HSO_3GlcA\beta1$-3Gal, $HSO_3GlcA\beta1$-3Galβ1-4GlcNAcβ1-3Galβ1-4Glc, GalNAcα, GalNAcα1-3(Fucα1-2)Galβ1-4GlcNAc, Galα1-3(Fucα1-2)Galβ1-4GlcNAc, $HSO_3(Sia)Le^X$, $HSO_3(Sia)Le^A$, Le^Y, GlcNAcβ1-6(GlcNAcβ1-3)Galβ1-4Glc, GalNAcβ1-4(Neu5Acα2-3)Galβ1-4Glc, mannose-6-phosphate, GalNAcβ1-4GlcNAc, oligo-sialic acid, N-glycolylneuraminic acid, Galα1-4Galβ1-4Glc, Galα1-4Galβ1-4GlcNAc.

9. (Amended) [Compound] A compound according to [any one of claims 1 to 8] claim 1, wherein

m is an integer from 2 to 4,

X is CH_{4-m},

A^1 is CH_2,

A^2 is NHCO,

A^3 is CH_2,

k is 8,

sp is $(CH_2)_3CONHCH_2CONHC_6H_4$-4-$CH_2O$- and

R is Neu5Acα2-6Galβ1-4GlcNAc.

10. (Amended) [Aggregate] An aggregate of the general formula (II):

$$\{X(B)_m\}_n \qquad (II)$$

wherein

$X(B)_m$ may be identical or different and denote a compound of the general formula (I), [as defined in any one of claims 1 to 11]

$$X(B)_m \qquad (I)$$

wherein

X is an m-valent unit and

B are identical or different and denote K-R,

wherein

K is a bond or is A^1-$(A^2$-$A^3)_k$-sp, wherein

A^1 is $(CH_2)_tY(CH_2)_u$, wherein

Y is >C=O, >NH, -O-, -S- or a bond,

t is an integer from 0 to 6 and

u is an integer from 0 to 6,

A^2 is -NHCO-, -CONH-, -OCONH- or SCONH-, or is –CO-,

A^3 is $(CH_2)_r$, $O(CH_2)_r$, $NH(CH_2)_r$, $S(CH_2)_r$ or -(CHQ)-, wherein

r is an integer from 1 to 6 and

Q is a substituted or unsubstituted alkyl or aryl group,

sp is a divalent spacer or a bond, and

k is an integer from 5 to 100, and

R is hydrogen; a ligand suitable for specific bonding to a receptor; a marker molecule; or a catalytically active group; and

m is at least 2,

with the proviso that

(1) in the compound at least one R is not hydrogen,

(2) there are at least two K that are not a bond, and

(3) X, B and m are so selected that an intermolecular association of the K in liquid phase by the formation of hydrogen bonds is possible, with formation of aggregates that present on the surface a plurality of R that are not hydrogen, and

(4) the molar mass of the fragment $X(K)_m$ is less than 20,000, and

n is from 2 to 100,000,

and wherein $X(B)_m$ are non-covalently bonded.

11. (Amended) [Aggregate] An aggregate according to claim 10 having a leaf-like, linear, cyclic, polycyclic, polyhedral, spherical or dendritic structure.

12. (Amended) [Aggregate] An aggregate according to claim 10 [or 11] of two or more different compounds [according to any one of claims 1 to 9] comprising a compound of the general formula (I)

$$X(B)_m \qquad (I)$$

wherein

X is an m-valent unit and

B are identical or different and denote K-R,

wherein

K is a bond or is A^1-(A^2-A^3)$_k$-sp, wherein

A^1 is $(CH_2)_t Y(CH_2)_u$, wherein

Y is >C=O, >NH, -O-, -S- or a bond,

t is an integer from 0 to 6 and

u is an integer from 0 to 6,

A^2 is -NHCO-, -CONH-, -OCONH- or SCONH-, or is –CO-,

A^3 is $(CH_2)_r$, $O(CH_2)_r$, $NH(CH_2)_r$, $S(CH_2)_r$ or -(CHQ)-, wherein

r is an integer from 1 to 6 and

Q is a substituted or unsubstituted alkyl or aryl group,

sp is a divalent spacer or a bond, and

k is an integer from 5 to 100, and

R is hydrogen; a ligand suitable for specific bonding to a receptor; a marker molecule; or a catalytically active group; and

m is at least 2,

with the proviso that

(1) in the compound at least one R is not hydrogen,

(2) there are at least two K that are not a bond, and

(3) X, B and m are so selected that an intermolecular association of the K in liquid phase by the formation of hydrogen bonds is possible, with formation of aggregates that present on the surface a plurality of R that are not hydrogen, and

(4) the molar mass of the fragment $X(K)_m$ is less than 20,000.

Claim 13 has been canceled.

14. (Amended) [Process] A method according to claim [13] 27, further comprising [in the case of a solution of the compound addition of] adding a concentrated salt solution, [a change in] changing the pH or the temperature, or [addition of] adding organic solvents.

15. (Amended) [Process] A method for changing the structure of [the] an aggregate [as defined in any one of claims 10 to 12, which comprises addition of] of the general formula (II)

$$\{X(B)_m\}_n \qquad (II)$$

wherein

$X(B)_m$ may be identical or different and denote a compound of the general formula (I),

$$X(B)_m \qquad (I)$$

wherein

X is an m-valent unit and

B are identical or different and denote K-R,

wherein

K is a bond or is A^1-(A^2-A^3)$_k$-sp, wherein

A^1 is $(CH_2)_tY(CH_2)_u$, wherein

Y is >C=O, >NH, -O-, -S- or a bond,

t is an integer from 0 to 6 and

u is an integer from 0 to 6,

A^2 is -NHCO-, -CONH-, -OCONH- or SCONH-, or is –CO-,

A^3 is $(CH_2)_r$, $O(CH_2)_r$, $NH(CH_2)_r$, $S(CH_2)_r$ or -(CHQ)-, wherein

r is an integer from 1 to 6 and

Q is a substituted or unsubstituted alkyl or aryl group,

sp is a divalent spacer or a bond, and

k is an integer from 5 to 100, and

R is hydrogen; a ligand suitable for specific bonding to a receptor; a marker molecule; or a catalytically active group; and

m is at least 2,

with the proviso that

(1) in the compound at least one R is not hydrogen,

(2) there are at least two K that are not a bond, and

(3) X, B and m are so selected that an intermolecular association of the K in liquid phase by the formation of hydrogen bonds is possible, with formation of aggregates that present on the surface a plurality of R that are not hydrogen, and

(4) the molar mass of the fragment $X(K)_m$ is less than 20,000, and

n is from 2 to 100,000,

and wherein $X(B)_m$ are non-covalently bonded,

further comprising adding a concentrated salt solution, [a change in] changing the temperature or the pH [or an addition of] and/or adding urea, trifluoroethanol or peptides.

16. (Amended) [Process for] A method according to claim 27 further comprising increasing the specific physiological activities of molecules by [their incorporation as] incorporating a radical R into a compound of the general formula (I) [as defined in any one of claims 1 to 9].

Claim 17 has been canceled.

18. (Amended) [Preparation according to claim 17 against] A method of treating diseases arising from inflammation, viral and bacterial infections, influenza viruses, selectin-mediated inflammatory processes, tumour metastases, or in the neutralisation of antibodies in autoimmune disorders and transplants; said method comprising administering a compound of the general formula (I)

$$X(B)_m \qquad (I)$$

wherein

X is an m-valent unit and

B are identical or different and denote K-R,

wherein

K is a bond or is A^1-$(A^2$-$A^3)_k$-sp, wherein

A^1 is $(CH_2)_t Y(CH_2)_u$, wherein

Y is >C=O, >NH, -O-, -S- or a bond,

t is an integer from 0 to 6 and

u is an integer from 0 to 6,

A^2 is -NHCO-, -CONH-, -OCONH- or SCONH-, or is –CO-,

A^3 is $(CH_2)_r$, $O(CH_2)_r$, $NH(CH_2)_r$, $S(CH_2)_r$ or -(CHQ)-, wherein

r is an integer from 1 to 6 and

Q is a substituted or unsubstituted alkyl or aryl group,

sp is a divalent spacer or a bond, and

k is an integer from 5 to 100, and

R is hydrogen; a ligand suitable for specific bonding to a receptor; a marker molecule; or a catalytically active group; and

m is at least 2,

with the proviso that

(1) in the compound at least one R is not hydrogen,

(2) there are at least two K that are not a bond, and

(3) X, B and m are so selected that an intermolecular association of the K in liquid phase by the formation of hydrogen bonds is possible, with formation of aggregates that present on the surface a plurality of R that are not hydrogen, and

(5) the molar mass of the fragment $X(K)_m$ is less than 20,000; or

administering into an aggregate of the general formula (II)

$$\{X(B)_m\}_n \qquad \text{(II)}$$

wherein

$X(B)_m$ may be identical or different and denote a compound of the general formula (I), and

n is from 2 to 100,000,

and wherein $X(B)_m$ are non-covalently bonded.

Claim 19 has been canceled.

20. (Amended) [Use of a compound as defined in any one of claims 1 to 9 or of an aggregate as defined in any one of claims 10 to 12 in the preparation of functionalised] A method according to claim 18 further comprising preparing functionalized molecular surfaces.

Claims 21 and 22 have been canceled.

23. (Amended) [Compound] A compound of the general formula (III),

$$X(B)_m \qquad \text{(III)}$$

wherein

X is an m-valent unit and

B are identical or different and denote K-H,

wherein

K is A^1-(A^2-A^3)$_k$-sp, wherein

A^1 is $(CH_2)_tY(CH_2)_u$, wherein

Y is >C=O, >NH, -O-, -S- or a bond,

t is an integer from 0 to 6 and

u is an integer from 0 to 6,

A^2 is -NHCO-, -CONH-, -OCONH- or SCONH-, or is –CO-,

A^3 is $(CH_2)_r$, $O(CH_2)_r$, $NH(CH_2)_r$, $S(CH_2)_r$ or -(CHQ)-, wherein

r is an integer from 1 to 6 and

Q is a substituted or unsubstituted alkyl or aryl group,

sp is a divalent spacer or a bond, and

k is an integer from 5 to 100, and

m is at least 2,

with the proviso that

(1) X, B and m are so selected that an intermolecular association of the K in liquid phase is possible, especially under aqueous conditions, by the formation of hydrogen bonds, with formation of aggregates, and

(2) the molar mass of the fragment $X(K)_m$ is less than 20,000, especially less than 4000.

Claim 24 has been canceled.

25. (New) A method of preparing a therapeutic drug comprising:

preparing a compound of the general formula (III),

$$X(B)_m \qquad \text{(III)}$$

wherein

X is an m-valent unit and

B are identical or different and denote K-H,

wherein

K is A^1-(A^2-A^3)$_k$-sp, wherein

A^1 is $(CH_2)_tY(CH_2)_u$, wherein

Y is >C=O, >NH, -O-, -S- or a bond,

t is an integer from 0 to 6 and

u is an integer from 0 to 6,

A^2 is -NHCO-, -CONH-, -OCONH- or SCONH-, or is –CO-,

A^3 is $(CH_2)_r$, $O(CH_2)_r$, $NH(CH_2)_r$, $S(CH_2)_r$ or -(CHQ)-, wherein

r is an integer from 1 to 6 and

Q is a substituted or unsubstituted alkyl or aryl group,

sp is a divalent spacer or a bond, and

k is an integer from 5 to 100, and

m is at least 2,

with the proviso that

(1) X, B and m are so selected that an intermolecular association of the K in liquid phase is possible, especially under aqueous conditions, by the formation of hydrogen bonds, with formation of aggregates, and

(2) the molar mass of the fragment $X(K)_m$ is less than 20,000, especially less than 4000.

26. (New) A method of treating diseases arising from inflammation, viral and bacterial infections, influenza viruses, selectin-mediated inflammatory processes, tumour metastases, or in the neutralisation of antibodies in autoimmune disorders and transplants; said method comprising administering a compound of the general formula (III),

$$X(B)_m \qquad \text{(III)}$$

wherein

X is an m-valent unit and

B are identical or different and denote K-H,

wherein

K is A^1-(A^2-A^3)$_k$-sp, wherein

A^1 is $(CH_2)_tY(CH_2)_u$, wherein

Y is >C=O, >NH, -O-, -S- or a bond,

t is an integer from 0 to 6 and

u is an integer from 0 to 6,

A^2 is -NHCO-, -CONH-, -OCONH- or SCONH-, or is –CO-,

A^3 is $(CH_2)_r$, $O(CH_2)_r$, $NH(CH_2)_r$, $S(CH_2)_r$ or -(CHQ)-, wherein

r is an integer from 1 to 6 and

Q is a substituted or unsubstituted alkyl or aryl group,

sp is a divalent spacer or a bond, and

k is an integer from 5 to 100, and

m is at least 2,

with the proviso that

(1) X, B and m are so selected that an intermolecular association of the K in liquid phase is possible, especially under aqueous conditions, by the formation of hydrogen bonds, with formation of aggregates, and

(2) the molar mass of the fragment $X(K)_m$ is less than 20,000, especially less than 4000.

27. (New) A method of preparing an aggregate comprising:

preparing a compound of the general formula (II)

$$\{X(B)_m\}_n \qquad \text{(II)}$$

wherein

$X(B)_m$ may be identical or different and denote a compound of the general formula (I),

$$X(B)_m \qquad \text{(I)}$$

wherein

X is an m-valent unit and

B are identical or different and denote K-R,

wherein

K is a bond or is A^1-(A^2-A^3)$_k$-sp, wherein

A^1 is $(CH_2)_tY(CH_2)_u$, wherein

Y is >C=O, >NH, -O-, -S- or a bond,

t is an integer from 0 to 6 and

u is an integer from 0 to 6,

A^2 is -NHCO-, -CONH-, -OCONH- or SCONH-, or is –CO-,

A^3 is $(CH_2)_r$, $O(CH_2)_r$, $NH(CH_2)_r$, $S(CH_2)_r$ or -(CHQ)-, wherein

r is an integer from 1 to 6 and

Q is a substituted or unsubstituted alkyl or aryl group,

sp is a divalent spacer or a bond, and

k is an integer from 5 to 100, and

R is hydrogen; a ligand suitable for specific bonding to a receptor; a marker molecule; or a catalytically active group; and

m is at least 2,

with the proviso that

(1) in the compound at least one R is not hydrogen,

(2) there are at least two K that are not a bond, and

(3) X, B and m are so selected that an intermolecular association of the K in liquid phase by the formation of hydrogen bonds is possible, with formation of aggregates that present on the surface a plurality of R that are not hydrogen, and

(4) the molar mass of the fragment $X(K)_m$ is less than 20,000, and

n is from 2 to 100,000,

and wherein $X(B)_m$ are non-covalently bonded.

28. (New) A method of preparing a therapeutic drug comprising:

preparing the compound of the general formula (I)

$$X(B)_m \qquad (I)$$

wherein

X is an m-valent unit and

B are identical or different and denote K-R,

wherein

K is a bond or is A^1-$(A^2$-$A^3)_k$-sp, wherein

A^1 is $(CH_2)_tY(CH_2)_u$, wherein

Y is >C=O, >NH, -O-, -S- or a bond,

t is an integer from 0 to 6 and

u is an integer from 0 to 6,

A^2 is -NHCO-, -CONH-, -OCONH- or SCONH-, or is –CO-,

A^3 is $(CH_2)_r$, $O(CH_2)_r$, $NH(CH_2)_r$, $S(CH_2)_r$ or -(CHQ)-, wherein

r is an integer from 1 to 6 and

Q is a substituted or unsubstituted alkyl or aryl group,

sp is a divalent spacer or a bond, and

k is an integer from 5 to 100, and

R is hydrogen; a ligand suitable for specific bonding to a receptor; a marker molecule; or a catalytically active group; and

m is at least 2,

with the proviso that

(1) in the compound at least one R is not hydrogen,

(2) there are at least two K that are not a bond, and

(3) X, B and m are so selected that an intermolecular association of the K in liquid phase by the formation of hydrogen bonds is possible, with formation of aggregates that present on the surface a plurality of R that are not hydrogen, and

(4) the molar mass of the fragment $X(K)_m$ is less than 20,000; or

preparing the compound of the general formula (II):

$$\{X(B)_m\}_n \qquad \text{(II)}$$

wherein

$X(B)_m$ may be identical or different and denote a compound of the general formula (I), and

n is from 2 to 100,000,

and wherein $X(B)_m$ are non-covalently bonded; and

a pharmaceutically acceptable carrier.

29. (New) A method of preparing a diagnostic test comprising:

providing a test reagent

preparing a compound of the general formula (I)

$$X(B)_m \qquad \text{(I)}$$

wherein

X is an m-valent unit and

B are identical or different and denote K-R,

wherein

K is a bond or is A^1-$(A^2$-$A^3)_k$-sp, wherein

A^1 is $(CH_2)_tY(CH_2)_u$, wherein

Y is >C=O, >NH, -O-, -S- or a bond,

t is an integer from 0 to 6 and

u is an integer from 0 to 6,

A^2 is -NHCO-, -CONH-, -OCONH- or SCONH-, or is –CO-,

A^3 is $(CH_2)_r$, $O(CH_2)_r$, $NH(CH_2)_r$, $S(CH_2)_r$ or -(CHQ)-, wherein

r is an integer from 1 to 6 and

Q is a substituted or unsubstituted alkyl or aryl group,

sp is a divalent spacer or a bond, and

k is an integer from 5 to 100, and

R is hydrogen; a ligand suitable for specific bonding to a receptor; a marker molecule; or a catalytically active group; and

m is at least 2,

with the proviso that

(1) in the compound at least one R is not hydrogen,

(2) there are at least two K that are not a bond, and

(3) X, B and m are so selected that an intermolecular association of the K in liquid phase by the formation of hydrogen bonds is possible, with formation of aggregates that present on the surface a plurality of R that are not hydrogen, and

(5) the molar mass of the fragment $X(K)_m$ is less than 20,000; or

preparing an aggregate of the general formula (II)

$$\{X(B)_m\}_n \qquad \text{(II)}$$

wherein

$X(B)_m$ may be identical or different and denote a compound of the general formula (I), and

n is from 2 to 100,000,

and wherein $X(B)_m$ are non-covalently bonded;

and comparing the test reagent to the compounds of the general formula (I) or (II).